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JC17 Rec'd PCT/PTO 13 NOV 2001

215653US-2-PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
GUILLAUME LAFFONT ET AL : ATTN: APPLICATION DIVISION
SERIAL NO: NEW APPLICATION :
(Based on PCT/IB01/01814)
FILED: HEREWITH :
FOR: REFRACTOMETER WITH :
BLAZED BRAGG GRATINGS

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to a first examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS

Please cancel Claims 1-11 without prejudice.

Please add new Claims 12-22 as follows:

12. (New) System for measuring the refractive index of at least one medium comprising:

a waveguide comprising at least one transducer formed, in the part of the waveguide brought into contact with the medium, by a blazed Bragg grating, the spectral response of which depends on the refractive index of the medium by means of energy coupling between the guided mode and cladding modes and/or a continuum of radiative modes,

a light source optically coupled to the waveguide in order to direct this light therein and to make it interact with the grating,

spectral analysis means provided to analyse the light which has interacted with the grating and to provide a spectrum corresponding to this grating,

acquisition means provided to recover this spectrum, and

electronic processing means provided to correlate, from the spectrum thus recovered, the spectral response of the grating with a value of the refractive index of the medium and to provide this value.

13. (New) System according to Claim 12, in which the electronic processing means are provided in order to determine the lower and upper envelope curves of the normalized spectrum and the normalized area between these two curves.

14. (New) System according to Claim 12, in which the waveguide comprises a single blazed Bragg grating.

15. (New) System according of Claim 12, in which the waveguide comprises a plurality of blazed Bragg gratings, the spectral analysis means are provided in order to analyse the light which has interacted with the gratings and to provide the spectra corresponding respectively to these gratings, the acquisition means are provided in order to demultiplex, in an optical or digital manner, the spectra thus provided and to discriminate the respective spectral responses of the gratings and the electronic processing means are provided in order to correlate the spectral response of each grating with the value of the refractive index of the medium corresponding to this grating.

16. (New) System according to Claim 12, in which the light source is a broad spectrum source.

17. (New) System according to Claim 14, in which the light source is a narrow spectrum source, the wavelength of which can be tuned, and the spectral analysis means comprise a photodetector.

18. (New) System according Claim 12, in which the light source is optically coupled to a first end of the waveguide and the spectral analysis means are optically coupled to a second end of this waveguide, for the purpose of measuring the refractive index by transmission.

19. (New) System according Claim 12, in which the light source and the spectral analysis means are optically coupled to a first end of the waveguide and means of reflecting the light are provided at the second end of the waveguide, for the purpose of measuring the refractive index by reflection.

20. (New) System according to Claim 12, in which the acquisition and spectral analysis means are provided in order to acquire each spectrum, with as small a wavelength pitch as allowed by the analysis technique.

21. (New) System according Claim 12, in which the waveguide is an optical fibre.

22. (New) System according Claim 12, in which the waveguide is a planar waveguide.

IN THE ABSTRACT

Please amend the Abstract on page 30 as follows:

ABSTRACT

A refractometer with blazed Bragg gratings. In order to measure the refractive index of a medium, for example a liquid or a gas, the refractometer includes a waveguide having a

blazed Bragg grating, the spectral response of which depends on the refractive index of the medium and a light source in order to make this light interact with the grating. Further, spectral analysis of the light which has interacted with the grating is performed, the spectrum provided by the spectral analysis is recovered, and, from the recovered spectrum, the spectral response of the grating is correlated with one value of the refractive index of the medium.

REMARKS

Favorable consideration of this application, as presently amended, is respectfully requested.

The present Preliminary Amendment is submitted to set forth new Claims 12-22 for examination. New Claims 12-22 are deemed to be self-evident from the original disclosure, and thus are not deemed to raise any issues of new matter.

The Abstract has also been amended by the present response to be in more proper format under United States practice.

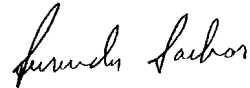
09926509/926511

JC17 Rec'd PCT/PTO 13 NOV 2001

The present application is believed to be in condition for a full and thorough examination on the merits. An early and favorable consideration of the present application is hereby respectfully requested.

Respectfully submitted,

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Serial No:

Amendment Filed on:

11-13-01IN THE CLAIMS

Claims 1-11 (Cancelled).

Claims 12-22 (New).

IN THE ABSTRACT

Please amend the Abstract on page 30 as follows:

--ABSTRACT

[Refractometer] A refractometer with blazed Bragg gratings. In order to measure the refractive index of a medium [(18)], for example a liquid or a gas, [this system comprises] the refractometer includes a waveguide [(14)] having a blazed Bragg grating [(16)], the spectral response of which depends on the refractive index of the medium[,] and a light source [(20)] in order to make this light interact with the grating[.]. Further, [means (22) for the] spectral analysis of the light which has interacted with the grating is performed, [means (24) for recovering] the spectrum provided by the spectral analysis [means] is recovered, and [means (26) to correlate], from the recovered spectrum, the spectral response of the grating is correlated with one value of the refractive index of the medium.

[Figure 3.]--